The Sussex Flow Initiative (SFI)

Natural Flood Management Project

5 Year Summary of Achievements

Introduction and Project Background

In 2012, the Sussex Wildlife Trust, the Environment Agency and the Woodland Trust began an innovative project on the Ouse River in East Sussex, called Sussex Flow Initiative. The project aimed to investigate ways that catchment-wide natural flood interventions can help to reduce flood peaks in areas vulnerable to flooding, whilst increasing biodiversity and providing multiple benefits at a landscape scale.

SFI works with the Catchment Partnership and others to develop new approaches to natural flood management (NFM) measures across the 672 km² area and 1220 km of river in the Ouse catchment, and to make recommendations on how and where to target them. We are a pilot project to gauge the potential benefits of trees, woods and other low cost NFM measures in lowland UK rivers, delivering NFM measures in partnership with communities and landowners. SFI aims to lead the field in showing that there are positive NFM options which can work alongside traditional flood risk management in rural and urban communities.

One of the key targets of SFI is to promote and integrate a holistic approach to water and land management across the catchment, and to make the catchment more resilient to flooding and drought, through a combination of demonstration and advocacy. Although the effects of NFM such as tree planting can take time to show their benefits, multiple actions taken now can provide positive natural capital benefits far into the future. SFI hopes to understand and articulate the natural capital benefits of NFM, so that we can make the best choices for now and for future generations.

In 2016, we entered into a new partnership with a Local Authority, Lewes District Council, who pledged their support by collaborating with SFI on NFM upstream of Lewes town, and in 2017, the Environment Agency launched a National Programme of NFM. These are exciting times for the integration of landscape scale approaches to flood management. The following report is a summary of the achievements of the SFI and TrUck projects over the last 5 years. We hope that the information helps to provide further evidence of the need for future work in lowland Natural Flood Management.




Summary of SFI Project Achievements 2012 – 2017

The following are the main achievements of the Sussex Flow Initiative project over the last five years:-

We have planted nearly 28,000 trees *(to end April 2017)* including :-

- 4.3 km of new hedgerows [1] comprising 21,400 native hedgerow plants
- and 8,000 trees in 5 ha of woodland, including 3.5ha of floodplain woodland & 100 rare Black poplars

We have created over 1,000,000 litres of new, seasonal water storage which can be activated in every rainfall event, including a flood storage pond, over 100 pocket ponds, and other Run-off Attenuation Features (RAF's). We have advised on the creation of at least 500,000 litres more seasonal water storage.

We have engaged with 150 landowners, covering nearly 12% of the Ouse catchment. This comprises over 5,650 ha including around 33% of the Uck floodplain[2] and over 11% of the Ouse floodplain.[3]

The NFM measures that we have implemented have had a positive influence on at least 9.5 km of the river network and a minimum of 70 ha of land directly downslope or downstream of the river network.

We have held a range of events for communities and stakeholders including Water Fairs, and Soil and Water Workshops, benefiting at least 40 landowners, 2,000 local residents and many other stakeholders.

Our work has been supported by over 100 volunteers, and over 150 volunteer work days on everything from GIS mapping to hedge planting. The value of this volunteer time is in excess of £17,500.[4]

Over the 5 years, our partner organisations have contributed at least £175,000 of their time 'in kind'[5] and other organisations have contributed at least £50,000 of their time in kind.

We produced a model (EcoServ-GIS) which maps where 9 different essential natural services such as water purification are being provided in the Ouse. The work of SFI contributed to enhancing at least 24 ecosystem services through its three main strands of work in washland, woodland/hedgerow and wetland restoration.

The work of SFI is contributing to providing Natural Capital through Provisioning Services, Regulating Services and Cultural Ecosystem Services. This includes:-

- creating hedgerows in at least 2.6 km of Buglife B-line target pollinator areas,
- enhancing genetic and bio-diversity by linking landscapes via hedgerows and new habitat networks
- helping to improve water quality
- sequestering between 11,780 and 15,200 tonnes of CO^2 [6]
- contributing to the reduction of erosion / run-off, and the retention of soils,
- using hedges to help to store and slow down around 12,900 m^3 (tonnes) of water during rainy periods[7].

With partners and contractors we have developed a range of computer models and mapping tools to assess woodlands and rivers in the Ouse for their suitability / unsuitability for NFM measures. This includes a Habitat Potential Model which maps the potential to enhance the ecological networks for 9 key wetland habitats.

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[1] or nearly 14 ha if counted as woodland at 2.5 m spacing.

[2] EA Floodzone 2

[3] Uck 475 ha; Ouse 2,900 ha

[4] Based on £100 per day for standard volunteers and £150 a day for professional volunteers

[5] Based on Woodland Trust, EA, Sussex Wildlife Trust & Sussex Biodiversity Records Centre including trees and Comms support

[6] If forest were left to grow old naturally taking into account natural disturbance, carbon storage is estimated to be 170 to 220 tC (or 620 to 800 tCO2) per hectare. www.forestry.gov.uk/forestry/infd-889hsz#1

[7] *A 50m hedgerow at the bottom of a 1ha field can store 150 - 375 cubic metres of water during rainy periods". 4300m of new hedgerow, divided by 50m (length in calculation), times 150 (minimum water storage suggested).*

We have supported three research projects up to PhD level including projects on the design of Large Woody Dams and their influence on channel flow and geomorphology at :-

- Brighton University (Heidi Burgess)
- Newcastle University (Steven Birkinshaw / SHETRANS)
- University of Birmingham (Stefan Krause / Megan Klaar)

We have worked with National Flagship projects including Slowing the flow at Pickering, EA Working with Natural Processes (WwNP) and the National Environment Research Council (NERC).

We have worked closely with at least 30 key national and local stakeholders, and a number of Lead and Local Flood Authorities including Lewes District Council; East Sussex County Council; the Regional Flood and Coastal Committee; Flood, Coastal Risk Managers and Local Flood Action Groups.

We have conducted detailed sub-catchment mapping of nearly 5,000 ha of the Ouse catchment, and have facilitated River Habitat Surveys of over 51 km of the main river, covering 10 sub catchment waterbodies. These have resulted in the production of detailed sub catchment plans for two sub catchments – the North End Stream and the Bevern stream (including Plumpton Mill stream).

We have disseminated information about Natural Flood Management in a number of ways including by :-

- Creating 3 websites / pages with a cumulate visitor traffic to pages and blogs of over 12,400 people
- Created an online video which had 3,523 views in under one week and 130 You-Tube views
- Created a Facebook page with 135 followers
- Tweeting with at least 2175 views (41 likes, 31 Retweets, 10,315 Impressions)
- Articles in magazines and newspapers with a combined readership of at least 40,000
- Radio interviews to shows with at least 13,000 listeners

We have produced our own guidance on NFM, including a guide to Natural Woody Material in rivers for NFM. And we have contributed to at least 6 major publications and case studies including :-

- CaBa (Catchment Based Approach), WwNP, Woodland Trust Woody debris guidance, and Rewilding Britain's Rewilding reduced Flood Risk document.

We have achieved the aims we set out in our original Vision document and more and have assisted major projects outside our project area including :-

- The ARC project, Knepp Wildlands, Powdermill stream Sub catchment plan and others